UNITED STATES NAVAL OBSERVATORY

CIRCULAR NO. 84

U. S. Naval Observatory, Washington 25, D. C. December 18, 1957

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS

JUNE, 1957

By Winifred Sawtell Cameron

These results are based upon measurements made at the Naval Observatory on plates secured either there or at the Mt. Wilson Observatory. The symbols used for the entries in the successive columns are as follows:

U.T., the epoch of observation in Universal Time.
No., the identifying number of the group assigned by Mt. Wilson.
Δl, the heliographic difference in longitude from the central meridian, measured positive to the west.
φ, the heliographic latitude, measured positive to the north.
ρ, the heliocentric angular distance from the line joining the centers of the Earth and Sun.
A, the true area of the umbra plus penumbra, expressed in millionths of the visible hemisphere.
s, the number of spots.

An asterisk means that no Mt. Wilson number was assigned. Plates secured at the Naval Observatory are indicated by N, and those at Mt. Wilson by M. The plate quality, which follows, is indicated by:

1, Poor; 2, Fair; 3, Good; 4, Very Good; 5, Excellent.

The following five quantities are listed successively at the end of each day, and give for that day:

1. The total number of groups, g.
2. The longitude of the central meridian, L_0.
3. The latitude of the center of the disc, B_0.
4. The total value of A.
5. The total value of s.

The mean daily area and the mean relative sunspot number, $r=10g+s$ are given at the end of the month.

These results are a continuation of those published in the *Monthly Weather Review* from February 1, 1927 to December 31, 1947.

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
1.568	12371	−80	−25	80	218	1
N−2	12371	−77	−27	77	291	1
	12370	−75	+11	76	485	1
	12365	−40	−19	44	121	2
	12365	−37	−17	41	533	3
	12368	−13	−17	20	24	1
	12368	−12	−16	18	170	3
	12368	−12	−19	21	97	2
	12368	−10	−17	19	48	1
	12368	− 8	−19	19	97	1
	12368	− 7	−19	19	85	2
	12368	− 5	−19	18	61	1
	12360	− 3	−24	24	339	1
	12372	+20	−24	30	36	2
	12372	+24	−24	33	32	2
	12357	+35	−22	39	24	1
	12357	+35	−25	41	133	1
	12357	+36	−24	42	242	1
	12357	+37	−24	43	109	2
	12353	+64	+23	67	533	1
	(8)	(96)	(−1)		3678	30
2.605	12373	−76	−18	76	873	3
N−1	12370	−71	+14	72	97	1
	12370	−60	+11	62	582	1
	12371	−67	−25	70	194	2
	12371	−63	−27	66	339	1
	12365	−26	−20	33	61	2
	12365	−24	−17	30	727	3
	12368	− 1	−20	20	24	1
	12368	0	−17	17	145	3
	12368	+ 2	−16	16	97	1
	12368	+ 3	−18	18	170	2
	12368	+ 4	−16	16	97	2
	12368	+ 5	−20	21	194	3
	12368	+ 7	−18	21	73	1
	12368	+ 8	−19	22	73	1
	12368	+ 8	−18	21	36	1
	12360	+12	−24	26	315	3
	12372	+34	−24	40	48	2
	12357	+50	−25	54	73	3
	12357	+50	−23	54	291	1
	12357	+54	−23	56	48	1
	12353	+77	+23	78	582	1
	(9)	(82)	(0)		5139	39
3.609	12373	−78	−16	78	16	3
M−4	12373	−76	−16	76	36	3
	12373	−67	−17	69	12	1
	12373	−65	−17	66	291	7
	12373	−63	−21	65	16	1
	12373	−61	−18	64	412	6
	12370	−59	+14	61	6	2
	12370	−57	+15	60	36	3
	12370	−55	+15	56	16	3
	12370	−53	+14	55	12	3
	12370	−52	+13	54	6	1
	12370	−50	+14	53	6	3
	12370	−47	+15	50	6	1
	12370	−45	+12	46	291	1
	12371	−56	−29	61	6	1
	12371	−54	−25	57	121	1
	12371	−53	−27	57	6	1
	12371	−48	−26	53	194	2
	12365	−14	−19	24	12	5
	12365	−12	−20	24	48	9
	12365	−11	−15	17	6	3
	12365	−10	−19	22	16	3
	12365	− 9	−17	21	461	4
	12375	+ 3	+ 9	10	12	3
	12375	+ 5	+ 8	11	12	2
	12368	+11	−21	24	24	5
	12368	+11	−19	23	73	6
	12368	+12	−17	21	73	15
	12368	+14	−16	21	12	2
	12368	+15	−16	22	12	4
	12368	+16	−18	25	364	20
	12368	+18	−19	26	48	4
	12368	+19	−20	27	24	4
	12368	+21	−19	28	16	3
	12368	+22	−17	27	24	3
	12368	+22	−22	29	6	1
	12368	+23	−18	28	36	2
	12368	+24	−21	31	6	1
	12360	+20	−24	31	12	7
	12360	+21	−26	34	109	3
	12360	+23	−25	34	109	3
	12360	+25	−24	34	16	7
	12374	+42	− 5	43	6	1
	12374	+44	− 4	45	6	1
	12372	+45	−25	50	12	3
	12357	+61	−22	64	24	4
	12357	+64	−26	66	97	8
	12357	+64	−24	66	194	1
	12357	+65	−22	66	6	4
	12357	+66	−24	68	24	3
	(10)	(69)	(0)		3389	187
4.601	12373	−64	−15	65	16	2
M−4	12373	−62	−16	64	6	3
	12373	−60	−16	62	12	4
	12373	−55	−20	57	12	2
	12373	−54	−18	56	36	5
	12373	−51	−18	54	145	15
	12373	−50	−16	53	12	2
	12373	−47	−18	50	364	5
	12373	−47	−21	51	32	4
	(*)	−55	−34	61	12	3
	12378	−46	−13	47	6	2

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12370	−44	+14	46	6	2
	12370	−42	+15	44	16	6
	12370	−40	+16	44	6	1
	12370	−37	+14	41	12	3
	12370	−33	+12	35	291	2
	12371	−43	−29	49	6	1
	12371	−40	−25	46	121	1
	12371	−37	−25	44	6	1
	12371	−35	−26	43	145	1
	12365	0	−18	18	12	4
	12365	+ 2	−20	20	73	6
	12365	+ 2	−15	15	12	2
	12365	+ 3	−17	17	388	5
	12365	+ 3	−19	20	16	5
	12365	+ 3	−15	15	12	3
	12365	+ 5	−15	16	6	1
	12375	+16	+ 9	18	16	6
	12375	+16	+ 8	18	12	3
	12375	+18	+ 8	21	12	3
	12375	+18	+ 9	22	24	2
	12368	+24	−22	33	6	1
	12368	+24	−19	31	24	6
	12368	+24	−17	30	48	8
	12368	+26	−19	32	6	1
	12368	+30	−17	35	242	20
	12368	+33	−19	37	48	11
	12368	+35	−19	39	16	2
	12368	+35	−17	38	12	5
	12368	+36	−18	40	32	1
	12360	+34	−26	42	6	1
	12360	+35	−25	42	121	3
	12360	+37	−24	44	61	5
	12374	+57	− 4	58	6	1
	12357	+75	−27	76	32	2
	12357	+76	−25	77	194	1
	12357	+77	−26	78	36	2
	(11)	(56)	(0)		2735	175
5.726	12373	−40	−22	45	24	2
M−2	12373	−38	−18	43	16	1
	12373	−37	−21	43	32	1
	12373	−36	−19	40	170	14
	12373	−33	−20	38	412	4
	12373	−32	−22	38	24	2
	12373	−30	−22	36	6	1
	12370	−27	+13	31	12	1
	12370	−26	+10	28	12	2
	12370	−25	+ 9	27	32	1
	12370	−22	+12	25	16	2
	12370	−17	+12	22	339	2
	12381	−26	+14	30	12	1
	12381	−26	+15	30	16	1
	12381	−22	+15	26	24	2
	12371	−26	−28	37	12	1
	12371	−25	−26	36	97	1
	12371	−20	−27	34	170	1
	12365	+16	−19	26	73	3
	12365	+16	−15	22	16	2
	12365	+17	−16	24	412	5
	12365	+18	−15	24	16	1
	12365	+18	−18	26	6	2
	12365	+20	−15	25	6	1
	12365	+22	−18	28	24	2
	12375	+30	+11	33	16	1
	12375	+32	+ 9	34	73	6
	12375	+32	+10	34	48	4
	12375	+34	+10	36	133	3
	12368	+38	−17	42	12	2
	12368	+40	−17	44	24	3
	12368	+44	−17	47	85	6
	12368	+44	−18	47	32	2
	12368	+44	−16	46	16	1
	12368	+45	−17	47	48	4
	12368	+46	−18	49	24	2
	12368	+48	−18	51	32	1
	12368	+50	−18	53	6	1
	12368	+50	−17	53	12	1
	12368	+52	−17	54	32	1
	12360	+50	−25	54	97	2
	12360	+53	−24	56	24	1
	(8)	(41)	(0)		2693	97
6.561	12384	−80	+17	80	97	1
N−2	12373	−36	−16	39	16	2
	12373	−34	−16	37	12	1
	12373	−26	−19	33	48	1
	12373	−25	−17	30	85	4
	12373	−24	−19	31	97	2
	12373	−22	−18	28	558	2
	12373	−18	−20	27	12	2
	12381	−15	+16	23	24	2
	12370	−14	+10	17	36	3
	12370	− 7	+11	13	364	2
	12371	−14	−25	29	121	1
	12371	− 9	−26	27	218	1
	12377	+24	−21	32	12	1
	12377	+25	−23	34	24	2
	12377	+27	−23	35	32	2
	12365	+27	−15	32	73	1
	12365	+29	−18	35	61	2
	12365	+30	−16	34	412	4
	12365	+30	−14	34	32	2
	12365	+31	−18	35	12	3
	12365	+33	−17	37	32	4
	12375	+40	+11	42	48	2
	12375	+43	+10	44	218	7
	12375	+46	+11	47	218	2
	12368	+52	−16	54	6	1
	12368	+55	−16	56	36	1
	12368	+56	−15	57	121	6

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12368	+60	−17	63	16	1
	12368	+64	−16	65	16	1
	12360	+61	−24	64	73	2
	12360	+64	−22	66	16	1
	(10)	(30)	(0)		3146	69
7.507	12384	−67	+16	68	73	1
N–2	12373	−16	−22	26	32	1
	12373	−14	−19	24	61	2
	12373	−13	−17	22	85	1
	12373	−12	−19	23	97	3
	12373	− 9	−18	22	533	1
	12381	− 3	+16	16	6	1
	12381	+ 3	+16	16	24	1
	12371	− 2	−26	26	170	1
	12371	+ 3	−27	27	206	1
	12370	+ 5	+11	12	364	2
	12377	+37	−23	44	12	1
	12377	+40	−23	45	36	1
	12365	+40	−16	43	121	3
	12365	+44	−16	46	267	2
	12365	+45	−16	47	36	3
	12375	+51	+12	53	97	2
	12375	+53	+11	54	145	2
	12375	+55	+12	56	61	2
	12375	+57	+11	58	242	2
	12368	+68	−15	69	48	2
	12368	+68	−16	70	48	2
	12360	+74	−24	75	48	1
	(10)	(17)	(0)		2812	38
8.592	12387	−82	+33	83	145	2
M–2	12387	−75	+34	77	242	8
	12387	−72	+31	74	679	1
	12384	−51	+19	54	48	1
	12390	−38	+23	44	6	2
	12390	−36	+23	42	12	2
	12389	−21	−24	32	6	1
	12373	− 9	−15	17	6	5
	12373	− 5	−17	18	16	7
	12373	− 3	−23	24	48	10
	12373	− 3	−18	18	16	6
	12373	+ 1	−18	18	48	4
	12373	+ 2	−18	18	12	1
	12373	+ 2	−17	17	12	5
	12373	+ 4	−18	19	436	2
	12388	0	+22	22	6	1
	12381	+10	+18	22	6	1
	12381	+11	+18	22	6	1
	12381	+12	+17	21	6	1
	12370	+10	+10	15	12	3
	12370	+12	+10	16	16	6
	12370	+17	+11	21	16	4
	12370	+19	+11	23	242	2
	12370	+22	+12	25	6	2
	12371	+12	−26	28	109	1
	12371	+15	−27	32	170	1
	12383	+14	−33	35	16	3
	12383	+16	−34	37	6	1
	12377	+51	−26	55	24	2
	12377	+54	−25	57	16	2
	12377	+55	−25	58	97	2
	12365	+55	−18	57	48	6
	12365	+57	−16	60	6	1
	12365	+58	−17	61	194	3
	12375	+67	+ 9	68	109	3
	12375	+68	+ 7	69	73	6
	12375	+72	+ 8	73	145	2
	12375	+74	+ 8	75	194	1
	(13)	(3)	(0)		3255	112
9.648	12387	−72	+31	74	339	4
N–3	12387	−69	+33	72	242	7
	12387	−61	+32	65	824	5
	12391	−44	+13	45	16	1
	12391	−43	+13	44	12	1
	12384	−37	+18	42	73	1
	12390	−26	+22	34	16	1
	12390	−24	+22	33	32	3
	12373	+ 8	−16	18	16	1
	12373	+15	−15	16	16	1
	12373	+15	−18	19	32	2
	12373	+17	−17	20	533	2
	12373	+17	−15	24	16	1
	12371	+26	−25	36	121	1
	12371	+29	−26	38	194	2
	12383	+27	−32	41	73	5
	12383	+29	−30	41	48	1
	12383	+34	−31	45	12	1
	12370	+33	+11	34	364	1
	12377	+62	−25	65	97	1
	12377	+68	−24	70	48	1
	12365	+70	−16	72	194	1
	(10)	(349)	(0)		3318	44
10.512	12387	−63	+31	66	291	5
N–2	12387	−60	+29	64	97	1
	12387	−58	+31	63	97	2
	12387	−50	+32	56	921	3
	12391	−35	+13	36	36	2
	12391	−34	+12	35	97	1
	12391	−32	+13	34	24	1
	12391	−31	+12	33	48	1
	12384	−26	+18	31	73	1
	12373	+18	−16	26	16	2
	12373	+21	−16	26	12	1
	12373	+27	−17	34	12	2
	12373	+30	−16	35	533	1

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12371	+37	−24	44	85	1
	12371	+41	−25	47	182	1
	12383	+40	−31	49	218	4
	12383	+43	−28	50	218	1
	12370	+44	+12	45	388	1
	12377	+75	−24	76	73	2
	12365	+85	−15	85	291	1
	(9)	(337)	(+1)		3712	34
11.500	12395	−65	−22	68	73	1
N−2	12387	−50	+31	56	242	4
	12387	−47	+29	53	73	2
	12387	−45	+31	51	97	3
	12387	−44	+30	50	36	1
	12387	−38	+32	46	824	6
	12391	−23	+14	26	73	3
	12391	−21	+13	23	32	2
	12391	−18	+13	22	16	2
	12391	−17	+13	21	24	2
	12384	−14	+18	22	48	1
	12396	+31	−28	42	12	2
	12373	+44	−16	46	412	2
	12371	+49	−24	54	85	1
	12371	+53	−25	57	145	2
	12383	+51	−31	57	24	3
	12383	+54	−30	60	485	5
	12383	+55	−27	60	121	1
	12370	+57	+12	58	339	1
	(9)	(324)	(+1)		3161	44
12.496	12401	−80	+ 9	80	12	1
N−3	12401	−75	+ 8	75	97	1
	12402	−76	−15	77	48	1
	12397	−72	−21	74	73	1
	12395	−55	−21	58	16	1
	12395	−51	−22	55	24	1
	12387	−36	+32	45	194	4
	12387	−35	+29	44	73	2
	12387	−33	+29	42	36	1
	12387	−32	+31	42	170	4
	12387	−31	+29	41	36	2
	12387	−26	+31	38	582	5
	12387	−23	+33	37	194	2
	12391	− 8	+14	15	24	3
	12391	− 6	+14	15	16	2
	12391	− 6	+12	14	32	2
	12391	− 5	+13	13	24	1
	12391	− 4	+12	12	16	2
	12384	− 1	+18	17	36	2
	12399	+ 4	+25	24	16	1
	12396	+36	−27	45	6	1
	12396	+41	−27	48	16	2
	12398	+54	−23	58	16	1
	12398	+57	−20	61	32	1

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12373	+57	−16	60	436	2
	12371	+63	−24	66	109	1
	12371	+66	−25	69	145	1
	12383	+66	−32	70	32	2
	12383	+69	−30	72	630	7
	12383	+70	−27	73	97	1
	12370	+70	+12	70	339	1
	(14)	(311)	(+1)		3577	59
13.505	12407	−85	−20	85	436	1
N−4	12406	−85	−16	85	97	1
	12406	−80	−15	80	145	1
	12403	−72	−24	75	121	2
	12401	−65	+10	65	16	1
	12401	−64	+ 9	64	12	1
	12401	−61	+ 8	61	16	2
	12402	−61	−15	63	24	1
	12397	−57	−20	61	48	1
	12395	−36	−23	43	32	1
	12387	−25	+32	38	170	6
	12387	−24	+29	36	97	3
	12387	−23	+28	35	12	3
	12387	−22	+32	36	16	1
	12387	−21	+30	35	121	2
	12387	−18	+30	34	97	4
	12387	−17	+31	34	16	3
	12387	−16	+32	34	36	3
	12387	−15	+30	33	242	1
	12387	−14	+32	34	364	5
	12387	−11	+34	34	145	4
	12391	+ 4	+14	14	73	1
	12391	+ 5	+13	13	16	4
	12391	+ 6	+13	14	6	1
	12391	+ 8	+13	15	12	2
	12391	+ 9	+13	15	36	1
	12396	+51	−26	56	12	1
	12373	+70	−16	71	436	1
	12373	+70	−19	72	36	1
	12371	+76	−24	77	97	1
	12371	+79	−25	79	97	2
	12383	+79	−30	80	388	3
	12383	+80	−27	81	145	2
	12370	+85	+12	85	339	1
	(14)	(298)	(+1)		3956	68
14.495	12409	−80	−39	83	436	1
N−2	12407	−70	−16	72	48	3
	12407	−68	−18	70	339	1
	12407	−67	−16	70	73	2
	12406	−64	−15	65	48	1
	12403	−61	−23	64	73	3
	12403	−59	−23	63	61	1
	12401	−50	+10	51	24	1
	12402	−49	−15	53	6	1

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12402	−45	−16	48	6	2
	12397	−45	−19	49	36	2
	12395	−24	−22	33	12	1
	12387	−14	+34	36	24	1
	12387	−13	+33	34	73	3
	12387	−11	+33	33	121	4
	12387	−11	+30	31	73	2
	12387	− 8	+34	34	24	2
	12387	− 8	+32	33	218	3
	12387	− 8	+29	30	24	2
	12387	− 6	+31	30	24	4
	12387	− 2	+31	29	315	2
	12387	0	+33	32	339	7
	12387	+ 3	+34	34	97	3
	12391	+17	+15	22	12	1
	12391	+17	+14	22	61	1
	12391	+19	+16	25	6	1
	12391	+23	+13	26	24	2
	12391	+24	+13	27	48	3
	12396	+65	−25	68	12	1
	12373	+82	−15	82	339	2
	(12)	(285)	(+1)		2996	63
15.507	12417	−88	+13	88	291	1
N−2	12415	−83	+16	83	194	1
	12416	−83	+22	83	145	3
	12414	−81	+25	81	242	1
	12409	−75	−40	79	339	3
	12409	−67	−38	73	485	3
	12407	−56	−16	57	16	2
	12407	−55	−18	58	291	2
	12406	−53	−16	55	12	1
	12406	−50	−15	53	36	3
	12403	−48	−23	53	61	2
	12403	−47	−23	52	6	1
	12403	−45	−23	49	12	1
	12402	−34	−16	37	12	3
	12402	−31	−16	35	61	3
	12397	−32	−19	37	36	1
	12412	− 7	+49	49	6	1
	12387	− 3	+35	34	32	1
	12387	− 1	+34	34	12	3
	12387	+ 2	+33	33	97	4
	12387	+ 2	+31	30	73	2
	12387	+ 3	+35	34	6	1
	12387	+ 4	+33	32	32	5
	12387	+ 5	+32	32	97	6
	12387	+ 7	+32	32	109	4
	12387	+10	+32	33	242	2
	12387	+10	+34	34	32	1
	12387	+13	+33	34	242	5
	12387	+15	+33	35	97	2
	12387	+16	+32	34	36	3
	12387	+17	+31	34	48	1
	12408	+24	−10	26	24	3
	12408	+25	− 9	27	24	2
	12391	+30	+14	33	24	1
	12391	+31	+16	34	6	1
	12391	+33	+16	36	16	1
	12391	+36	+13	38	32	2
	12391	+37	+13	39	97	1
	(14)	(271)	(+1)		3623	83
16.619	12417	−83	+20	83	485	1
N−2	12417	−82	+17	82	194	1
	12417	−80	+18	80	291	1
	12417	−75	+14	75	1067	3
	12415	−68	+16	68	242	1
	12416	−70	+23	71	145	3
	12414	−69	+25	71	242	1
	12409	−66	−40	72	73	1
	12409	−64	−41	70	339	5
	12409	−61	−38	67	36	2
	12409	−56	−37	64	73	1
	12409	−56	−38	64	97	2
	12409	−53	−38	63	630	4
	12413	−57	−16	60	61	2
	12407	−41	−18	44	364	2
	12406	−40	−16	43	24	2
	12406	−39	−16	43	36	1
	12406	−38	−15	42	24	1
	12406	−36	−14	39	121	3
	12403	−34	−23	40	24	1
	12402	−18	−16	25	24	1
	12402	−17	−16	25	73	3
	12402	−15	−16	24	85	2
	12397	−17	−19	27	48	1
	12418	+ 7	−20	23	16	1
	12387	+14	+35	36	12	1
	12387	+16	+30	33	36	2
	12387	+16	+33	35	73	2
	12387	+18	+32	35	12	3
	12387	+22	+32	36	145	3
	12387	+24	+31	37	194	2
	12387	+26	+33	39	364	6
	12387	+29	+33	42	194	1
	12387	+32	+31	42	61	2
	12408	+39	−11	41	48	1
	12408	+41	−10	42	36	1
	12391	+53	+12	54	121	1
	(15)	(257)	(+1)		6110	71
17.513	12421	−80	+26	80	97	2
N−3	12417	−73	+19	74	242	1
	12417	−70	+16	70	242	3
	12417	−70	+20	71	776	1
	12417	−67	+16	67	121	3
	12417	−65	+17	66	170	3
	12417	−62	+14	62	776	9

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12415	−57	+16	58	267	2
	12416	−60	+24	63	16	2
	12416	−58	+23	60	12	1
	12416	−56	+22	58	16	2
	12416	−56	+23	59	24	1
	12414	−56	+25	59	145	1
	12409	−53	−41	64	158	1
	12409	−53	−43	64	267	2
	12409	−51	−40	62	97	2
	12409	−50	−41	62	242	3
	12409	−49	−38	60	48	1
	12409	−41	−38	61	97	4
	12409	−39	−38	54	339	3
	12409	−38	−39	54	339	3
	12413	−45	−16	47	48	1
	12407	−28	−18	34	339	1
	12406	−26	−14	30	48	3
	12406	−26	−16	31	36	3
	12406	−25	−14	29	12	1
	12406	−23	−14	27	182	3
	12403	−21	−23	32	12	1
	12420	−14	−16	22	73	3
	12420	−13	−19	24	73	4
	12397	− 5	−19	22	12	1
	12402	− 4	−16	17	48	5
	12387	+25	+35	41	6	2
	12387	+26	+30	37	12	1
	12387	+27	+34	42	6	1
	12387	+31	+35	44	24	2
	12387	+33	+33	44	73	4
	12387	+35	+32	45	218	3
	12387	+36	+33	46	121	5
	12387	+39	+34	49	145	4
	12387	+41	+35	51	48	2
	12387	+41	+34	50	145	3
	12387	+43	+32	50	48	2
	12391	+65	+12	65	73	2
	(15)	(245)	(+1)		6293	107
18.508	12426	−85	−23	85	485	1
N−3	12425	−77	+18	77	194	1
	12421	−67	+25	69	97	1
	12417	−61	+18	62	267	2
	12417	−58	+16	59	267	6
	12417	−57	+19	59	727	3
	12417	−56	+16	57	24	2
	12417	−55	+15	56	48	3
	12417	−53	+16	54	24	2
	12417	−51	+16	53	36	2
	12417	−49	+13	51	824	8
	12415	−44	+15	46	267	1
	12416	−44	+23	48	48	3
	12414	−43	+25	47	145	2
	12409	−39	−41	55	121	2
	12409	−39	−43	56	388	4
	12409	−39	−44	56	16	1
	12409	−37	−39	54	170	3
	12409	−35	−40	53	97	4
	12409	−32	−39	49	48	2
	12409	−31	−39	49	97	2
	12409	−31	−37	48	61	2
	12409	−29	−38	47	121	3
	12409	−27	−39	48	364	3
	12409	−25	−38	46	291	1
	12413	−32	−16	35	36	1
	12419	−25	−18	32	6	1
	12423	−18	−22	29	24	1
	12407	−16	−18	25	303	1
	12406	−14	−16	22	16	5
	12406	−14	−14	20	61	2
	12406	−13	−16	22	61	4
	12406	−12	−14	19	16	1
	12406	−10	−14	18	121	4
	12406	−10	−16	20	97	4
	12420	− 4	−20	22	12	4
	12420	− 3	−17	19	16	2
	12420	− 2	−20	21	16	2
	12420	− 1	−16	17	97	3
	12420	0	−18	20	97	5
	12403	+ 6	−16	18	12	2
	12403	+10	−16	20	12	4
	12397	+ 7	−19	23	12	1
	12387	+38	+35	50	24	1
	12387	+45	+34	53	109	1
	12387	+47	+33	54	242	2
	12387	+52	+34	58	97	3
	12387	+55	+34	60	194	2
	12408	+65	− 9	65	16	2
	12391	+78	+11	78	48	1
	(19)	(232)	(+1)		6972	123
19.506	12426	−83	−24	83	194	1
N−3	12426	−80	−23	80	533	4
	12426	−69	−23	72	727	1
	12425	−63	+19	64	145	1
	12427	−58	+34	64	32	1
	12421	−56	+26	60	109	1
	12417	−48	+20	52	388	3
	12417	−46	+17	48	97	3
	12417	−45	+21	47	679	5
	12417	−44	+16	46	194	6
	12417	−43	+17	45	73	3
	12417	−40	+18	43	48	3
	12417	−40	+16	43	48	3
	12417	−38	+15	41	36	2
	12417	−37	+18	41	24	1
	12417	−35	+13	36	679	6
	12415	−31	+16	34	242	2
	12414	−30	+26	37	121	1
	12409	−26	−42	49	533	3

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12409	−24	−38	46	145	1
	12409	−22	−40	46	145	4
	12409	−19	−38	45	36	1
	12409	−18	−39	45	97	4
	12409	−16	−37	42	170	4
	12409	−14	−37	41	97	2
	12409	−13	−39	43	194	1
	12409	− 9	−37	40	291	3
	12413	−18	−15	26	24	1
	12407	− 3	−17	20	267	1
	12406	− 1	−14	16	145	4
	12406	+ 1	−15	16	24	1
	12406	+ 5	−14	16	121	3
	12420	+11	−15	20	32	1
	12420	+12	−18	24	32	2
	12420	+13	−15	22	97	3
	12420	+13	−17	24	121	4
	12387	+58	+34	63	73	1
	12387	+61	+33	65	242	2
	12387	+66	+34	70	242	2
	(13)	(218)	(+2)		7497	95
20.504	12426	−70	−25	74	242	4
N−3	12426	−68	−23	71	485	6
	12426	−67	−25	70	73	1
	12426	−65	−24	68	61	2
	12426	−60	−22	64	32	4
	12426	−57	−23	62	824	1
	12427	−51	+34	56	48	1
	12427	−48	+33	55	48	1
	12427	−47	+35	55	36	1
	12425	−49	+18	52	170	1
	12431	−45	+31	51	48	1
	12421	−43	+26	48	85	1
	12417	−36	+16	37	12	1
	12417	−35	+20	38	291	2
	12417	−33	+17	35	291	7
	12417	−32	+20	35	582	5
	12417	−30	+18	34	48	1
	12417	−28	+19	34	24	2
	12417	−26	+17	30	16	2
	12417	−25	+15	28	73	1
	12417	−24	+16	27	32	1
	12417	−22	+14	25	727	4
	12415	−17	+16	23	242	1
	12414	−16	+26	29	109	1
	12409	−15	−42	45	412	2
	12409	−14	−40	44	121	1
	12409	−12	−38	42	121	3
	12409	−11	−40	43	291	3
	12409	− 7	−39	43	48	2
	12409	− 5	−38	41	170	3
	12409	− 5	−39	42	145	6
	12409	− 3	−37	40	242	3
	12409	− 2	−39	42	170	2

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12409	+ 1	−38	41	16	1
	12409	+ 3	−37	40	291	2
	12413	− 5	−14	16	16	1
	12407	+12	−17	24	339	1
	12406	+14	−15	23	73	4
	12406	+16	−14	24	109	1
	12420	+22	−18	29	24	1
	12420	+25	−16	31	97	1
	12420	+25	−18	33	61	2
	12420	+26	−17	33	16	1
	12420	+26	−16	32	36	2
	12429	+39	+45	55	16	1
	12429	+43	+45	58	12	1
	12418	+50	−16	54	16	1
	12422	+58	+12	60	16	2
	12387	+75	+33	77	291	1
	12387	+80	+33	81	242	1
	(17)	(205)	(+2)		7990	101
21.500	12426	−56	−25	61	291	1
N−3	12426	−54	−23	58	436	4
	12426	−52	−25	57	218	2
	12426	−48	−24	53	267	5
	12426	−43	−22	47	970	2
	12432	−38	+24	43	12	1
	12432	−35	+25	40	6	1
	12427	−37	+34	47	48	1
	12427	−36	+34	46	24	1
	12431	−36	+29	44	12	1
	12431	−36	+32	45	24	1
	12431	−32	+31	41	61	2
	12425	−36	+19	39	133	1
	12421	−30	+27	38	73	1
	12417	−23	+20	28	218	2
	12417	−21	+18	26	145	6
	12417	−18	+21	26	630	2
	12417	−18	+17	24	170	4
	12417	−16	+19	24	73	1
	12417	−14	+17	22	32	2
	12417	−13	+15	18	32	2
	12417	−10	+15	17	24	1
	12417	− 7	+14	15	582	3
	12415	− 6	+15	15	32	3
	12415	− 5	+16	15	291	1
	12414	− 5	+26	25	48	2
	12409	− 1	−41	43	679	5
	12409	0	−37	39	97	2
	12409	+ 1	−37	39	24	2
	12409	+ 2	−38	40	36	1
	12409	+ 6	−38	41	97	3
	12409	+ 7	−37	40	121	3
	12409	+10	−37	41	388	5
	12409	+10	−39	43	145	2
	12409	+16	−35	39	267	1
	12413	+ 7	−13	16	12	1

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12430	+19	+24	29	6	1
	12430	+23	+23	30	12	1
	12406	+24	−15	29	12	1
	12406	+26	−14	31	97	4
	12406	+30	−13	33	36	2
	12407	+25	−16	31	291	1
	12420	+35	−17	40	16	1
	12420	+37	−15	41	61	4
	12420	+38	−17	43	32	1
	12428	+56	+52	69	32	2
	12428	+61	+52	71	48	1
	12422	+72	+13	73	24	1
	(17)	(192)	(+2)		7385	98
22.606	12426	−41	−24	46	291	2
N−2	12426	−40	−22	45	533	7
	12426	−37	−23	44	194	3
	12426	−35	−23	42	339	6
	12426	−29	−22	36	1212	1
	12425	−22	+20	27	121	1
	12431	−22	+31	35	73	3
	12431	−16	+30	33	61	1
	12421	−16	+27	31	61	1
	12417	− 7	+20	20	267	4
	12417	− 5	+18	17	412	7
	12417	− 4	+21	18	630	2
	12417	− 2	+19	17	48	2
	12417	+ 2	+15	14	24	2
	12417	+ 6	+14	14	582	1
	12415	+ 9	+15	16	61	1
	12415	+10	+16	17	364	1
	12409	+10	−38	42	24	1
	12409	+11	−41	44	873	6
	12409	+13	−37	41	73	2
	12409	+14	−41	45	48	1
	12409	+14	−39	44	97	1
	12409	+15	−39	44	48	1
	12409	+18	−38	44	48	1
	12409	+24	−36	44	630	6
	12409	+24	−34	42	61	1
	12409	+28	−35	45	339	1
	12414	+10	+26	25	61	1
	12407	+38	−16	42	291	1
	12406	+45	−13	47	61	2
	12420	+51	−16	54	48	2
	12428	+70	+51	78	170	2
	12428	+80	+52	85	194	1
	(12)	(177)	(+2)		8339	75
23.574	12426	−28	−22	36	291	1
N−2	12426	−28	−24	37	339	3
	12426	−27	−20	35	36	1
	12426	−25	−23	35	145	2
	12426	−24	−23	34	145	1
	12426	−22	−22	32	170	3
	12426	−17	−21	28	1309	2
	12432	−13	+29	30	16	1
	12425	− 9	+21	22	121	1
	12431	− 4	+31	28	36	1
	12421	− 3	+27	26	48	1
	12417	+ 5	+20	18	218	2
	12417	+ 5	+24	23	12	1
	12417	+ 6	+20	19	48	2
	12417	+ 7	+18	18	158	2
	12417	+ 8	+18	19	121	3
	12417	+ 8	+23	23	533	2
	12417	+15	+16	21	32	1
	12417	+19	+15	24	582	2
	12409	+22	−41	46	679	3
	12409	+25	−37	46	61	1
	12409	+25	−40	47	121	3
	12409	+35	−38	51	97	1
	12409	+36	−34	49	97	1
	12409	+37	−36	51	485	3
	12409	+38	−34	50	48	1
	12409	+41	−35	52	339	1
	12415	+23	+15	26	48	1
	12415	+24	+16	27	267	1
	12407	+51	−16	54	339	1
	12430	+52	+24	55	48	1
	12406	+58	−12	61	24	1
	(11)	(165)	(+2)		7013	51
24.509	12434	−78	+ 7	78	582	1
N−4	12433	−73	+10	73	24	1
	12426	−17	−23	30	291	2
	12426	−16	−22	28	339	6
	12426	−16	−24	30	97	6
	12426	−14	−20	26	16	2
	12426	−14	−23	28	121	3
	12426	−13	−25	29	16	2
	12426	−11	−24	27	73	2
	12426	−10	−22	25	121	3
	12426	− 8	−23	25	97	7
	12426	− 5	−23	25	1261	4
	12432	− 3	+26	25	12	2
	12432	0	+29	27	16	3
	12425	+ 1	+24	23	24	2
	12425	+ 3	+21	18	97	1
	12431	+ 7	+31	29	32	1
	12421	+ 8	+27	27	24	1
	12417	+16	+24	27	6	1
	12417	+16	+20	24	121	4
	12417	+18	+20	26	61	5
	12417	+19	+18	26	48	6
	12417	+20	+22	27	485	1
	12417	+22	+18	26	48	4
	12417	+24	+17	28	12	2
	12417	+25	+18	30	6	2

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U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12417	+33	+15	35	533	4
	12409	+34	−40	52	582	9
	12409	+37	−41	54	36	2
	12409	+37	−39	54	61	2
	12409	+37	−38	54	32	5
	12409	+45	−36	57	6	1
	12409	+47	−37	60	121	1
	12409	+47	−33	56	73	3
	12409	+49	−35	59	145	2
	12409	+49	−32	57	16	4
	12409	+49	−36	52	16	1
	12409	+52	−34	60	630	3
	12415	+35	+16	37	267	3
	12407	+65	−16	67	291	2
	12430	+65	+24	67	24	1
	(12)	(152)	(+2)		6863	117
25.497	12441	−80	−17	80	48	1
N−2	12434	−66	+ 7	66	582	3
	12433	−65	+10	65	16	1
	12433	−63	+10	63	61	1
	12433	−60	+10	60	48	1
	12439	−31	−23	38	24	1
	12426	− 4	−23	25	339	2
	12426	− 4	−21	23	16	1
	12426	− 3	−24	26	242	3
	12426	− 2	−26	27	85	2
	12426	− 2	−21	23	48	1
	12426	− 1	−23	24	121	2
	12426	+ 2	−25	26	121	1
	12426	+ 4	−22	24	291	7
	12426	+ 7	−22	25	1212	1
	12426	+11	−23	26	36	1
	12425	+15	+22	25	97	1
	12431	+17	+32	34	24	1
	12431	+19	+31	34	12	2
	12421	+21	+28	34	16	1
	12417	+29	+20	34	145	2
	12417	+31	+20	35	48	1
	12417	+32	+18	35	73	2
	12417	+33	+22	37	436	2
	12417	+34	+17	37	48	3
	12417	+44	+15	45	582	1
	12409	+44	−40	58	291	5
	12409	+46	−41	60	485	3
	12409	+58	−34	65	16	1
	12409	+59	−38	67	121	3
	12409	+60	−36	66	145	1
	12409	+62	−33	67	145	2
	12409	+64	−35	69	679	1
	12415	+47	+16	50	291	2
	12407	+75	−16	76	242	1
	(12)	(139)	(+2)		7186	64

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
26.542	12443	−88	−14	88	145	1
N−3	12443	−82	−14	82	97	2
	12443	−80	−15	80	145	1
	12443	−78	−15	78	388	1
	12441	−66	−18	69	73	1
	12434	−53	+ 6	54	73	1
	12434	−52	+ 6	53	36	1
	12434	−50	+ 7	51	388	2
	12433	−52	+11	53	48	1
	12433	−50	+11	51	32	1
	12433	−48	+10	50	97	3
	12433	−45	+ 8	46	61	3
	12439	−21	−24	34	36	1
	12439	−19	−24	33	24	2
	12439	−17	−24	32	24	1
	12439	−16	−23	29	16	2
	12436	+ 3	+34	33	6	1
	12426	+12	−22	26	388	5
	12426	+12	−24	28	194	3
	12426	+12	−26	30	24	3
	12426	+12	−20	25	24	1
	12426	+14	−21	26	48	3
	12426	+14	−25	30	32	1
	12426	+14	−26	31	16	2
	12426	+16	−22	28	242	8
	12426	+17	−24	31	32	2
	12426	+21	−23	32	1067	3
	12435	+14	−15	23	12	1
	12425	+28	+22	34	97	1
	12417	+43	+21	45	73	2
	12417	+44	+20	47	73	2
	12417	+45	+23	49	485	2
	12417	+45	+19	48	12	1
	12417	+46	+18	49	12	2
	12417	+57	+15	58	533	2
	12409	+55	−40	66	291	4
	12409	+57	−41	67	194	1
	12409	+59	−39	67	267	1
	12409	+70	−38	68	121	1
	12409	+79	−35	80	582	1
	12415	+62	+17	64	291	1
	(12)	(125)	(+2)		6799	78
27 537	12446	−85	−18	85	97	1
N−3	12443	−71	−14	73	242	1
	12443	−70	−14	72	48	2
	12443	−64	−15	66	630	1
	12442	−56	−26	63	36	1
	12442	−54	−25	60	36	1
	12441	−51	−17	55	73	1
	12445	−48	+13	50	6	1
	12445	−46	+13	47	12	1
	12434	−38	+ 7	38	121	3
	12434	−37	+ 9	37	339	2
	12433	−38	+13	40	48	2

JUNE

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	12433	−35	+11	36	121	4
	12433	−32	+11	33	36	3
	12433	−30	+ 9	31	61	4
	12439	− 7	−22	26	48	2
	12439	− 4	−22	25	16	1
	12426	+23	−24	35	24	1
	12426	+24	−21	34	679	9
	12426	+26	−20	35	61	1
	12426	+28	−20	36	145	3
	12426	+34	−21	41	1212	5
	12425	+42	+24	45	73	1
	12417	+56	+21	58	48	2
	12417	+59	+24	62	533	2
	12417	+72	+16	72	533	1
	12409	+66	−39	73	267	1
	12409	+69	−38	75	242	2
	12415	+76	+17	76	194	1
	(13)	(112)	(+3)		5981	60
28.524	12448	−85	−18	85	48	1
N−2	12447	−80	+ 9	80	242	1
	12446	−70	−17	72	109	2
	12443	−59	−13	63	218	4
	12443	−57	−14	61	24	2
	12443	−49	−14	54	630	1
	12442	−44	−26	51	48	1
	12442	−37	−24	45	48	3
	12441	−37	−16	43	97	1
	12445	−33	+13	34	12	1
	12433	−26	+13	28	12	1
	12433	−23	+12	24	24	1
	12433	−17	+11	19	24	1
	12433	−15	+10	16	24	1
	12434	−25	+ 9	26	485	4
	12426	+35	−20	41	48	1
	12426	+36	−21	43	533	5
	12426	+37	−24	46	97	3
	12426	+40	−20	46	61	2
	12426	+46	−20	51	1115	4
	12426	+46	−24	53	194	2
	12425	+54	+24	57	73	1
	12417	+72	+24	72	533	1
	12409	+80	−39	84	242	1
	(13)	(99)	(+3)		4941	45
29.536	12452	−85	−19	85	194	1
N−2	12449	−80	−34	83	970	3
	12449	−76	−31	78	679	3
	12447	−65	+ 9	65	242	1
	12446	−60	−19	64	24	1
	12446	−54	−17	57	194	2
	12443	−44	−13	46	121	4
	12443	−35	−14	38	679	1
	12442	−29	−26	41	24	1
	12442	−23	−24	35	48	2
	12441	−24	−16	31	97	1
	12433	−11	+13	15	12	1
	12433	− 8	+13	14	36	2
	12433	− 6	+11	10	24	1
	12433	− 5	+12	10	32	1
	12434	−10	+ 9	13	436	4
	12426	+50	−21	55	485	6
	12426	+51	−24	56	36	2
	12426	+55	−20	59	315	5
	12426	+60	−21	64	1115	5
	12426	+61	−24	65	121	2
	12425	+68	+23	68	73	1
	12417	+88	+23	88	388	1
	(12)	(86)	(+3)		6345	51
30.593	12451	−68	+11	68	97	2
N−3	12451	−63	+11	63	121	3
	12452	−67	−19	70	218	1
	12449	−64	−34	69	1067	3
	12449	−60	−30	66	630	3
	12449	−58	−33	65	48	1
	12453	−55	+ 8	55	16	1
	12453	−52	+ 7	52	32	1
	12447	−52	+10	53	267	2
	12446	−45	−17	49	12	1
	12446	−44	−16	47	6	1
	12446	−43	−18	46	6	1
	12446	−39	−16	44	206	2
	12443	−30	−12	34	97	4
	12443	−28	−15	34	12	1
	12443	−21	−14	26	654	2
	12442	−14	−24	30	12	1
	12442	−12	−24	29	24	1
	12442	− 7	−24	29	24	2
	12442	− 6	−21	25	48	4
	12441	−14	−18	26	6	1
	12441	−10	−16	23	85	1
	12433	+ 1	+15	14	12	1
	12433	+ 3	+15	14	16	1
	12433	+ 5	+14	13	6	1
	12433	+10	+12	14	16	1
	12434	+13	+12	15	24	2
	12434	+13	+ 8	14	24	1
	12434	+13	+ 6	14	36	3
	12434	+14	+10	16	582	5
	12434	+16	+ 7	17	24	1
	12426	+63	−21	66	485	5
	12426	+66	−21	69	194	2
	12426	+70	−21	73	970	3
	12426	+71	−24	75	145	2
	(12)	(72)	(+3)		6222	67

Mean for 30 days, A=5104, r=200.2

NAVY-DPPO PRNC WASH. D.C.